CLAIMS

What is claimed is:

1. A multi-purpose user interface for a healthcare system having a medical device and a first central computer, the user interface comprising:

a housing;

a processor;

a memory;

a communications interface for providing communication between the user interface and the medical device and for providing communications between the user interface and the first central computer; and,

a display for displaying a medical prompt and for displaying medical information received from the first central computer.

2. The user interface of claim 1, wherein the housing comprises means for removable connection to the medical device.

3. The user interface of claim 1, wherein the medical device is a controller for a medical device.

4. The user interface of claim 1, wherein the user interface is structured to control the operation of the medical device.

5. The user interface of claim 1, wherein the first central computer is structured to control the operation of the medical device.

6. The user interface of claim 1, wherein the medical device is a MEMS pump.

7. The user interface of claim 6, wherein the MEMS pump is integral with a line set.

8. The user interface of claim 6, wherein the MEMS pump comprises an identifier for identifying the MEMS pump to at least one of the first central server and the user interface.

9. The user interface of claim 1 further comprising:

a thin-client operating system for operating the interface; and,

a first listener task received from the first central computer to listen for medical information from the first central computer.

10. The user interface of claim 9 further comprising:

a second listener task received from the first central computer to listen for medical information from the medical device.

11. The user interface of claim 1 wherein the communications interface is a wireless

communications interface for communicating with a wireless access point.

12. The user interface of claim 1, wherein the user interface is structured to receive status information regarding the operation of the medical device, and display the status information on the display.

13. The user interface of claim 1, wherein the medical device is one of at least a volumetric infusion pump and a syringe pump, and wherein the user interface is structured to program the medical device with at least one of an infusion rate, a volume to infuse, and a start time.

14. The user interface of claim 1, wherein the medical prompt is an infusion prompt displayed on the display of the user interface and wherein the infusion prompt comprises an infusion prompt for at least two channels controlled by the medical device.

15. The user interface of claim 1, wherein the means for removable connection to the medical device also comprises means for removable connection to a second medical device.

16. The user interface of claim 1, wherein the communications interface also provides for communication between the user interface and a second medical device.

17. The user interface of claim 1, wherein the medical device is a pump controller, and wherein the medical prompt displayed on the display of the user interface comprises a first infusion prompt for the pump controller and a second infusion prompt for a second pump controller.

18. The user interface of claim 1, wherein the user interface is structured to display a selection prompt on the display for selecting at least one medical device to associate the user interface with.

19. The user interface of claim 18, wherein the at least one medical device is of a first type and another medical device is of a second type, and wherein the user interface is structured to operate in accordance with a first personality associated with the first type and is structured to operate in accordance with a second personality associated with the second type.

20. The user interface of claim 19, wherein the first and second types are selected from a group consisting of an infusion pump personality, a syringe pump personality, and a pulse oximeter.

21. The user interface of claim 1, wherein the user interface is structured to receive the identification of at least one medical device to associate the user interface with.

22. The user interface of claim 21, wherein the at least one medical device is of a first

type and another medical device is of a second type, and wherein the user interface is structured to operate in accordance with a first personality associated with the first type and wherein the user interface is structured to operate in accordance with a second personality associated with the second type.

23. The user interface of claim 22, wherein the processor automatically programs the user interface to operate in accordance with the first type upon receipt of the identification of the at least one medical device.

24. The user interface of claim 1, wherein the user interface is structured to send a request to the first central computer to locate an available and qualified clinician for the user interface.

25. The user interface of claim 24, wherein the first central computer sends a message to a clinician device that the user interface is in need of attention, and receives a response from the clinician device that the clinician will attend to the user interface.

26. The user interface of claim 1, wherein at least a subset of communications sent and received by the communications interface are secure communications.

27. A healthcare system for use in a care-giving facility, comprising:

a medical device;

a first central computer; and,

a multi-purpose user interface having a housing, a processor, a memory, a communications interface for providing communication between the user interface and the medical device and for providing communications between the user interface and the first central computer, and a display for displaying a medical prompt and for displaying medical information received from the first central computer.

28. The healthcare system of claim 27, wherein the first central computer is a medical device server structured to utilize web services for communication with the medical device and to the user interface.

29. The healthcare system of claim 27, wherein the first central computer is structured to send a first script to the medical device to perform a first task and is structured to send a second script to the user interface to perform a second task.

30. The healthcare system of claim 29, wherein the first and second tasks are one of at least a listen task, an alarm task, an alert task, a message task, a low battery task, an occlusion task, a pre-occlusion task, a bolus task, a KVO task, a STAT task, a change order task, a new

order task, a lab result task, an MRI results task, an update task, a change in telemetry data task, a change in vital signs task, a doctor contact task, a patient contact task, a loss of communications task, a relay of message from other device task; and a new rate task.

31. The healthcare system of claim 27, wherein the first central computer comprises a first database and a first functional feature set, the healthcare system further comprising a second central computer having a second database and a second functional feature set, and wherein the user interface can receive data from the second database relating to the second functional feature set of the second central computer through the first central computer.

32. The healthcare system of claim 31, wherein the first functional feature set comprises at least one of a volumetric infusion pump feature and a syringe pump feature.

33. The healthcare system of claim 31, wherein the first functional feature set comprises at least one of a change pump channel feature, an administer infusion feature, a stop or discontinue infusion feature, a resume infusion feature, and a remove pump feature.

34. The healthcare system of claim 31, wherein the second functional feature set comprises at least one of a patient management feature, an item management feature, a facility management feature, a messaging feature, an alarms/alerts feature, a billing interface feature, a formulary interface feature, a lab results interface feature, an inventory tracking feature, a clinician administration feature, an order entry feature, a pharmacy feature, a user interface feature, a user interface and clinician association feature, a volumetric infusion pump feature, and a syringe pump feature.

35. The healthcare system of claim 31, wherein the first database comprises at least one of pump data, pump channel data, pump sub-channel data, order data, clinician data, patient data, user interface data, medical device data, hub data, titration data, comparison data, alarm data, escalation data, hub alarm data, pump alarm data, channel alarm data, and alarm history data.

36. The healthcare system of claim 31, wherein the second database comprises at least one of patient management data, item management data, facility management data, messaging data, alarms/alerts data, inventory tracking data, clinician administration data, order entry data, user interface and clinician association data.

36. The healthcare system of claim 31, wherein the first central computer is operably connected to the second computer through a dedicated TCP/IP hard-wired connection.

38. The healthcare system of claim 31, wherein the second central computer sends data

from the second database to the first central computer in a first standard protocol, and the first central computer sends the data to the user interface in a second standard protocol.

39. The healthcare system of claim 31, wherein the second central computer sends second data from the second database to the first central computer, wherein the first central computer combines the second data with first data from the first database, and wherein the first central computer sends the combined fist and second data to the user interface for display on a display of the user interface.

40. The healthcare system of claim 27 further comprising:

a plurality of wireless access points through which the medical device and the user interface communicate with the first central computer.

41. The healthcare system of claim 31, wherein the first central computer receives second data from the second database in the second central computer for use in a validation procedure.

42. The healthcare system of claim 41, wherein the validation procedure comprises the steps of receiving an XML document and determining whether the data expected to be received from the XML document is received.

43. The healthcare system of claim 31, wherein the first central computer is structured to receive patient order information from the second central computer and structured to receive medical device programming information from at least one of the medical device and the user interface, and wherein the first central computer is structured to compare the patient order information with the medical device programming information to determine if the medical device programming information is accurate, and wherein the first central computer is structured to send a result of the comparison to at least one of the medical device and the user interface.

44. The healthcare system of claim 43, wherein the result is sent from the first central computer to user interface to the medical device.

45. The healthcare system of claim 31, wherein the first central computer is securely connected to the second computer, and wherein the medical device and the user interface do not communicate directly with the second central computer.

46. The healthcare system of claim 27, further comprising:

a plurality of wireless access points for communication among the user interface, the medical device, and the first central computer.

47. The healthcare system of claim 27 further comprising a second medical device,

wherein the user interface housing is structured to provide for removable connection to the second medical device.

48. The healthcare system of claim 27, wherein the medical device has an alarm/alert module that identifies the existence of at least one of an alarm or alert condition, wherein the first central computer is structured to receive a signal from the alarm/alert module or from the multi-purpose user interface relating to the alarm or alert condition, the first central computer further having a timer module that sets a timer limit, the multi-purpose user interface having a receiver that receives an alarm or alert condition signal from the first central computer or from the medical device, wherein the user interface is further structured to display text or an icon representative of the alarm/alert condition signal, and to provide an audible alarm or alert representative of the received alarm/alert condition signal, and wherein the first central computer escalates the alarm or alert condition signal if no response to the alarm or alert condition signal is received from either the medical device or from the user interface within the timer limit.

49. A method for a healthcare system within a care-giving facility, the system having a medical device, a first central computer, and a multi-purpose user interface, the method comprising the steps of:

providing for receiving first medical data from the medical device at the first central computer;

providing for receiving second medical data from the user interface at the first central computer;

providing for sending third medical data to the user interface from the first central computer; and,

providing for sending a communication task to the user interface from the first central computer for providing at least one communication capability for communication between the medical device and the user interface.

50. The method of claim 49, further comprising the step of:

providing for sending fourth medical data to the medical device from the first central computer, the fourth medical data comprising operating parameters for operating the medical device.

51. A multi-purpose user interface for a healthcare system having a medical device and a first central computer, the user interface comprising:

a housing;

a processor;

a memory;

a communications interface for providing communications between the user interface and the first central computer; and,

a display for displaying a medical prompt and for displaying medical information received from the first central computer, wherein the medical prompt requests input on directing the first central computer to send operating parameters to the medical device.

52. The user interface of claim 51, wherein the medical prompt is generated at the first central computer and sent to the display of the user interface from the first central computer.

53. The user interface of claim 52, wherein the medical prompt is sent in the form of an html page and displayed on the display with a browser application running on the user interface.

54. A system for monitoring healthcare data, comprising:

a medication delivery pump for infusing a solution, the pump having a first location, the pump having first healthcare data associated therewith;

a monitor proximate the first location, the monitor having second healthcare data associated therewith;

a central computer for receiving the first and second healthcare data; and,

an interface device in communication with the central computer, for displaying at least a portion of each of the first and second healthcare data on a single interface screen on the interface device.

55. The system of claim 54, wherein the interface device is separate from the infusion pump and vital signs monitor.

56. The system of claim 54, wherein the interface device is remote from the first location.

57. The system of claim 54, wherein the central computer manipulates the first and second healthcare data to combine at least the portion of each of the first and second healthcare data for use in displaying on the interface device.

58. The system of claim 54, wherein the first healthcare data comprises at least one of pump alarm data, pump alert data, medication being infused data, medication to be infused data, rate of infusion data, medication dose data, volume to be infused data, volume already infused data, volume left to be infused data, infusion time data, time left for infusion data, time elapsed

for infusion data, order comparison data, limits data, patients with active infusions data, channels being used for pump data, location of pump data, pumps on standby data, pumps running data, pumps stopped data, and infusion near end alert data.

59. The system of claim 54, wherein the second healthcare data comprises at least one of vital signs date, arrhythmia data, hemodynamic data.

60. The system of claim 54, wherein the medication delivery pump comprises at least one of a MEMS pump and an infusion pump.

61. The system of claim 54, wherein the interface device further comprises options for programming and/or managing the pumps, wherein the options comprise at least one of clearing the volume infused at the end of a shift, silencing alarms and alerts, accessing documentation of titration history, accessing an eMAR, accessing clinical documentation, and accessing information on comparisons of drug label, rate/dose, or concentration data programmed on infusion pump to a pre-defined list of high and low dose or concentration limits.

62. A method for monitoring healthcare data within a healthcare system, comprising the steps of:

receiving first healthcare data associated with a medication delivery pump for infusing a solution, the pump having a first location;

receiving second healthcare data associated with a monitor proximate the first location; and,

sending at least a portion of each of the first and second healthcare data to an interface device for display on a single interface screen through the interface device.

63. The method of claim 62, further comprising the step of manipulating at a central computer the first and second healthcare data to combine at least the portion of each of the first and second healthcare data for use in displaying on the interface device.

64. The method of claim 62, further comprising the step of receiving a request from the interface device, the request comprising at least one of a programming request and a management request.

65. A system for tracking and reporting healthcare system data, comprising:

a first medical pump having first medical pump data associated therewith;

a second medical pump having second medical pump data associated therewith;

a central computer in communication with the first and second medical pumps over a communications network, for receiving and storing the first and second medical pump data; and,

an interface device having an interface screen for displaying a manipulated version of the first and second medical pump data.

66. The system of claim 65, wherein the central computer processes the first and second medical pump data to create the manipulated version of the first and second medical pump data by at least one of totalizing, calculating, combining, comparing, analyzing, computing, and tabulating the first and second medical pump data.

67. The system of claim 65, wherein the manipulated version of the first and second medical pump data comprises near misses for the first and second pumps.

68. The system of claim 67, wherein the near misses are broken down by medication.

69. The system of claim 65, wherein the manipulated version of the first and second medical pump data comprises at least one of near miss wrong drug data, near miss wrong time data, near miss wrong route data, near miss wrong dose data, and error wrong dose data.

70. The system of claim 69, wherein the manipulated version of the first and second medical pump data is broken down by at least one of unit, infusion, non-infusion and medication.

71. The system of claim 70, wherein the central computer is further provided for receiving and storing first non-pump medication delivery data and second non-pump medication delivery data, wherein the interface device is further provided for displaying a manipulated version of the first and second non-pump medication delivery data, and wherein the manipulated version of the first and second non-pump medication delivery data is broken down by hospital unit and totalized with the manipulated version of the first and second medical pump data.

72. The system of 69, wherein near miss wrong time comprises at least one of late delivery, early delivery, and missed delivery.

73. The system of claim 65, wherein the manipulated version of the first and second medical pump data comprises at least one of scan error data, source of scan data, scan type data (item or patient), expected scan data, and actual scan data.

74. The system of claim 65, wherein the interface device comprises a second interface screen for selecting criteria to display the manipulated version of the first and second medical pump data.

75. The system of claim 65, wherein the manipulated version of the first and second medical pump data comprises at least one of total administrations data, total wrong time data, reason data, medication data, patient data, order data, order administration time data,

administration time data, early medication data, late medication data, expired medication data, and missed medication data.

76. The system of claim 75, wherein the manipulated version is broken down by at least one of unit, infusion, non-infusion, nurse, and medication.

77. The system of claim 65, wherein the manipulated version of the first and second medical pump data comprises at least one of infusions data, matches data, resolved mismatches data, accepted mismatches data, and no comparisons data.

78. The system of claim 77, wherein the manipulated version is broken down by at least one of type of infusion and unit.

78. The system of claim 65, wherein the manipulated version of the first and second medical pump data comprises at least one of no match data, match data, and no comparison data.

79. The system of claim 78, wherein the manipulated version is broken down by at least one of infusion type, medication type, volume, infusion route, total, unit, primary and piggyback.

80. The system of claim 65, wherein the manipulated version of the first and second medical pump data comprises at least one of infusions data, rate matches data, rate resolved mismatches data, rate accepted mismatches data, rate no comparisons data, mode mismatches data.

81. The system of claim 80, wherein the manipulated version is broken down by at least one of unit, mode, medication, and patient.

82. The system of claim 65, wherein the manipulated version of the first and second medical pump data comprises at least one of unit data, patient data, nurse data, order data, administration data, occurrence data date, pump mode data, pump status data, rate data, comparison data, and dose data.

83. The system of claim 82, wherein the manipulated version is broken down by at least one of unit, patient, nurse, order, and administration.

84. The system of claim 65, wherein the manipulated version of the first and second medical pump data comprises at least one of infusion data, alert data, reprogramming after alert data, accepted alert override data, and label data.

85. The system of claim 84, wherein the manipulated version is broken down by at least one of unit and label.

86. The system of claim 65, wherein the manipulated version of the first and second medical pump data comprises at least one of infusion data, KVO alert data, alarm data, alarm by code data, alarm by device data, alert by code data, alert by device data, alarm code data, alert code data, escalation data, escalation level data, patient data, nurse data, order data, source data, device data, mode data, occurrence data, cleared time data, silenced time data, response time data, alarm condition data, mode data, and medication data.

87. The system of claim 86, wherein the manipulated version is broken down by at least one of unit, alarm condition, alert condition, alarm code, alert code, patient, nurse, order, occurrence time, and medication.

88. The system of claim 65, wherein the interface device is a pharmacist interface device, and wherein the manipulated version comprises at least one of pump status data for all connected pumps in a unit, pump status data for all connected pumps in a hospital, pump status data for all connected pumps which are active in the unit, pump status data for all connected pumps which are active in the hospital.

89. A system for tracking and reporting healthcare system data, comprising:

a plurality of interface devices, at least one of the interface devices having a receiver for receiving identifier data; and,

a central computer in communication with the plurality of interface devices over a communications network, for receiving and storing the identifier data, wherein at least one of the plurality of interface devices having an interface screen for displaying a manipulated version of the identifier data.

90. The system of claim 89, wherein the central computer processes the identifier data to create the manipulated version of the identifier data by at least one of totalizing, calculating, combining, comparing, analyzing, computing, and tabulating the identifier data or the use thereof in delivering medication.

91. The system of claim 89, wherein the manipulated version of the identifier data comprises near misses relating to the use of the identifier data.

92. The system of claim 91, wherein the manipulated data is broken down by at least one of unit, infusion, non-infusion, and medication.

93. The system of claim 89, wherein the manipulated version of the identifier data comprises at least one of near miss wrong drug data, near miss wrong time data, near miss wrong route data, near miss wrong dose data, and error wrong dose data.

94. The system of claim 89, wherein the manipulated version of the identifier data is broken down by hospital unit and totalized.

95. The system of claim 90, further comprising:

a first medical pump having first medical pump data associated therewith;

a second medical pump having second medical pump data associated therewith, wherein the central computer is in communication with the first and second medical pumps over the communications network, for receiving and storing the first and second medical pump data, wherein the at least one interface device having an interface screen for displaying a manipulated version of the first and second medical pump data and the manipulated version of the identifier data by hospital unit and totalized together.

96. The system of claim 89, wherein the manipulated version of the identifier data comprises at least one of scan error data, source of scan data, scan type data (item or patient), expected scan data, and actual scan data.

97. The system of claim 89, wherein the interface device comprises a second interface screen for selecting criteria to display the manipulated version of the identifier data.

98. The system of claim 97, wherein the criteria comprises at least one of time, date, device, unit, screen, bar code type, screen type, user group, and user.

99. The system of claim 89, wherein the manipulated version of the identifier data comprises at least one of total administrations data, total wrong time data, reason data, medication data, patient data, order data, order administration time data, administration time data, early medication data, late medication data, expired medication data, and missed medication data.

100. The system of claim 99, wherein the manipulated version is broken down by at least one of unit, infusion, non-infusion, nurse, and medication.